American Journal of
Preventive Medicine

RESEARCH ARTICLE

Declining Health-Related Quality of Life in the U.S.

Mark Olfson, MD, MPH,[1,2] Melanie Wall, PhD,[1,2] Shang-Min Liu, MS,[1,2] Michael Schoenbaum, PhD,[3] Carlos Blanco, MD, PhD[4]

Introduction: Despite recent declining mortality of the U.S. population from most leading causes, uncertainty exists over trends in health-related quality of life.

Methods: The 2001–2002 and 2012–2013 National Epidemiologic Surveys on Alcohol and Related Conditions U.S. representative household surveys were analyzed for trends in health-related quality of life (n=79,402). Health-related quality of life was measured with the Short Form-6 Dimension scale derived from the Short Form-12. Changes in mean Short Form-6 Dimension ratings were attributed to changes in economic, social, substance abuse, mental, and medical risk factors.

Results: Mean Short Form-6 Dimension ratings decreased from 0.820 (2001–2002) to 0.790 (2012–2013; $p<0.0001$). In regressions adjusted for age, sex, race/ethnicity, and education, variable proportions of this decline were attributable to medical (21.9%; obesity, cardiac disease, hypertension, arthritis, medical injury), economic (15.6%; financial crisis, job loss), substance use (15.3%; substance use disorder or marijuana use), mental health (13.1%; depression and anxiety disorders), and social (11.2%; partner, neighbor, or coworker problems) risks. In corresponding adjusted models, a larger percentage of the decline in Short Form-6 Dimension ratings of older adults (aged ≥55 years) was attributable to medical (35.3%) than substance use (7.4%) risk factors, whereas the reverse occurred for younger adults (aged 18–24 years; 5.7% and 19.7%) and adults aged 25–44 years (12.7% and 16.3%).

Conclusions: Between 2001–2002 and 2012–2013, there was a significant decline in average quality of life ratings of U.S. adults. The decline was partially attributed to increases in several modifiable risk factors, with medical disorders having a larger role than substance use disorders for older adults but the reverse for younger and middle-aged adults.

Am J Prev Med 2018;▮(▮):▮▮▮–▮▮▮.

INTRODUCTION

Tracking trends in population health permits opportunities to assess changes in deviations from optimal health. This can help policy makers set preventive healthcare priorities and assess progress. U.S. general population mortality data indicate slow but steady improvement.[1] Between 2005 and 2014, overall age-adjusted mortality declined for eight of the ten leading causes of death.[2] However, trends varied across population groups. Among middle-aged white adults, for example, all-cause mortality has recently increased.[3]

Health-related quality of life (HRQOL), which is based on self-assessed health, complements mortality measures. According to the Behavioral Risk Factor Surveillance System (BRFSS), between 2006 and 2010, the average number of physically and mentally unhealthy days increased among U.S. adults.[4] Between 1993 to 2007, a national decrease in HRQOL coincided with an increase in annual life expectancy.[5] An increase in access to life extending medical treatments might contribute to

From the [1]Department of Psychiatry, College of Physicians and Surgeons, Columbia University, New York, New York; [2]New York State Psychiatric Institute, New York, New York; [3]Office of Science Policy, Planning, and Communications, National Institute of Mental Health, NIH, Bethesda, Maryland; and [4]National Institute on Drug Abuse, Division of Epidemiology, Services, and Prevention Research, Bethesda, Maryland

Address correspondence to: Mark Olfson, MD, MPH, New York State Psychiatric Institute, Department of Psychiatry, College of Physicians and Surgeons of Columbia University, 1051 Riverside Drive, New York NY 10032. E-mail: mo49@cumc.columbia.edu.

0749-3797/$36.00
https://doi.org/10.1016/j.amepre.2017.11.012

decreasing HRQOL alongside declining age-adjusted mortality rates.[6]

The Short Form-12 (SF-12), a widely used measure of HRQOL, assesses physical functioning; social functioning; role limitations; mental health; and bodily pain.[7] The Short Form-6 Dimension (SF-6D) rating scale is an HRQOL measure that is generated by weighting SF-12 responses by their perceived importance using general population preferences.[8] SF-6D scores measure burden of various health states on a 0 to 1 scale corresponding to the worst to the best possible health outcomes, respectively.[9] Such health utility measures are suitable for public health surveillance, including how health conditions affect HRQOL and how these burdens change or over time.[10]

Because threats to HRQOL arise not just from medical diseases, but also from substance use, mental health conditions, economic circumstances, and social determinants of health,[11] many potential health risk factors bear consideration within a broad biopsychosocial framework. To assess recent changes in health risk factors and their contributions to HRQOL, data are analyzed from nationally representative surveys performed in 2001–2002 and 2012–2013, a period spanning the economic crisis of 2008–2009. Associations are evaluated between changes in common medical, substance abuse, mental health, social, and economic risk factors and trends in SF-6D scores. Separate analyses are performed for men and women and for four age groups. It is hypothesized that, consistent with the BRFSS results, there would be a decline in health utility ratings of U.S. adults. Also, it is further anticipated that a substantial percentage of this decline would be associated with increasing economic distress[5] and substance use[12] with smaller contributions from changes in mental disorders,[13] social problems, and common medical conditions.

METHODS

Data were derived from the 2001–2002 and 2012–2013 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC and NESARC III, respectively), nationally representative face-to-face interview surveys of the non-institutionalized adult population, conducted by the National Institute on Alcoholism and Alcohol Abuse. The NESARC response rate was 81%. The household response of NESARC III was 72%, person-level response rate was 84%, and overall response was 60.1%. Technical information concerning the fielding and nonresponse adjustment of the NESARC surveys are provided elsewhere.[14,15] Both NESARC surveys oversampled young adults, African Americans, and Hispanics. Data were adjusted for nonresponse and weighted to represent the U.S. civilian population using the Decennial Census and American Community Survey. IRBs of NIH and Westat approved the study protocols and informed consent was electronically recorded.

Study Sample

The analytic sample included all people aged ≥18 years. Study participants (n=79,402) included 43,093 in the 2001–2002 cohort and 36,309 in the 2012–2013 cohort. Demographic measures included self-reported age (18–44, 25–44, 45–54, and ≥55 years), sex, race/ethnicity (white, non-Hispanic; black, non-Hispanic; Hispanic; others), and education (high school or less, some college, college graduate).

Measures

In the NESARC surveys, HRQOL was measured using the SF-12, version 2, a reliable and valid measure of health status that reflects physical function, mental function, and well-being.[8] From SF-12 responses, SF-6D scores were computed. The SF-6D assesses physical functioning, role limitations, social functioning, pain, mental health, and vitality.[9] The SF-6D was developed from a United Kingdom general population valuation survey[9] using standard gamble techniques to derive a utility-based algorithm. The SF-6D has discriminative power across several medical conditions that is similar to other brief preference-based measures,[16] predicts mortality,[17] and does not have significant ceiling effects in the general population.[18] In the combined sample, the SF-6D had a mean of 0.80 (SD=0.15), a median of 0.86, skewness of −0.74, and a range of 0.34 to 1.00.

Past-year social risk factors included partner problems, such as divorce, separation, or breaking off a steady relationship; serious problems with a neighbor, friend, or relative; or trouble with a boss or coworker. Past-year economic risk factors included whether respondents had so much debt that they had no idea how they were going to repay it, and whether they were fired or laid off from a job.

Past-year substance use disorders (alcohol use disorders and drug use disorders), any marijuana use, daily alcohol use, and daily tobacco use were assessed by structured diagnostic interviews. The Alcohol Use Disorder and Associated Disabilities Interview Schedule-DSM-IV version (AUDADIS-IV) was used in NESARC[19] and the AUDADIS-5 was used in NESARC-III.[20] Minor modifications were made to the DSM-5 criteria (NESARC-III) to make them consistent with DSM-IV criteria (NESARC).[21] The AUDADIS-IV and AUDADIS-5 interviews also assessed mental health risk factors, including past-year depressive disorders (major depressive disorder or persistent depressive disorder) and anxiety disorders (panic disorder, general anxiety disorder, and social phobia).

Obesity was defined as self-reported height and weight equal to a BMI of ≥30.0. Cardiac disease included being told by a health-care professional in the past year that the respondent had chest pain or angina, a rapid heartbeat or tachycardia, a heart attack or a myocardial infarction, or any other heart disease. Liver disease, hypertension, and arthritis were defined with analogous items. Medical injuries in the past year were defined as injuries that required seeking medical help or cutting down on usual activities for more than half a day.

Statistical Analysis

Mean SF-6D scores were computed overall and stratified by age, sex, race/ethnicity, and education groups. The strength of associations between survey period (2001–2002 vs 2012–2013) and mean SF-6D scores were evaluated with unadjusted linear regression